Zadatak 54. Odredi sve kompleksne brojeve z za koje vrijedi:

1) $\arg\left(\dfrac{z^4}{1-\sqrt{3}\,i}\right) = \dfrac{5\pi}{3}$, $\operatorname{Re}(z^5) = -1$;

2) $\operatorname{Im}(z^2) = \sqrt{3}\operatorname{Re}(z^2)$, $\operatorname{Re}(z^9) = -1$;

3) $\arg(z^6) = \arg(-z^2)$, $\operatorname{Re}(z^3) = 2$.

Rješenje. **1)** $z_1 = \sqrt[5]{2}\left(-\frac{1}{2} - \frac{\sqrt{3}}{2}\,i\right)$, $z_2 = \sqrt[5]{2/\sqrt{3}}\left(\frac{\sqrt{3}}{2} - \frac{1}{2}\,i\right)$.

2) $z = \frac{1}{2} - \frac{\sqrt{3}}{2}\,i$.

3) $z_1 = -2 + 2i$, $z_2 = -2 - 2i$.